95.Unified categorical Modelling System, third stage

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Probabilidad Imposible: Unified categorical Modelling System, third stage

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The third stage of the unified categorical Modelling System is where based on the categorical comprehensive evolutionary/prediction map, the decisions regarding to the real object are going to be made, when the attributional process in the second stage by Application, either by an specific application within the Unified Application itself, or the Unified Application itself as a global application, is an attributional processes whose purpose is productive or mixed.

In fact, there are least two different strategies for the development of the categorical Modelling System, depending on what kind of categorical comprehensive model is created in the second stage of the categorical Modelling System.

The first strategy, the simplest one perhaps, is the one developed in the first series of posts dedicated to the specific categorical Modelling System, in the first phase, that categorical Modelling System as the first step in the third stage of Specific Artificial Intelligences for Productive or Mixed Artificial Research by Application.

In the post “Specific categorical Modelling System, second stage”, where I developed a proposal for the construction of the second stage of the categorical Modelling System in Specific Artificial Intelligences for Productive or Mixed Artificial Research by Application, that first proposal for the second stage of the categorical Modelling System was only: 1) the logical analysis of categorical sets as first sub-stage of the second stage of the specific categorical Modelling System (after the first categorical check in the first stage of the specific categorical Modelling System), analyse internal and external sets/vectors of the real object (internal are all those vectors in common with the category attributed, externa all those within the margin of error so not shared with the category attributed), to avoid contradictions between sets/vectors, 2) once it has been solved any possible contradiction between internal/external set/vectors the second sub-stage consists of the modelling of an static single model, for instance, the model of the farmland in scale labelling in the farmland what category of lentils was attributed to the farmland, being in fact a static model to include later on the categorical comprehensive model of the farm as a static model of the whole farm to include later on the map, or for instance the model in scale of a package labelling the category attributed to that package (category

according to a possible combination of variables such as: size, fragility, security, surveillance, risk...), indicating later on the comprehensive map origin and destiny of the package along with all the packages participating in the automatic delivery system, 3) as third sub-stage of the second stage of the categorical Modelling System the model is set up finally on the map.

Following this first proposal for the second stage of the specific categorical Modelling System, then the proposal about how to organize the decision making process, as I had stated in the post "Specific categorical Modelling System, third stage", is: according to the label, category attributed, to the model, category placed in the conceptual scheme attached to some relevant sets/vectors (for lentils: possible risk of diseases, plague, need of watering, and any other requirement to make them grow; for the package: size, fragility, security, surveillance, risk, etc.) the decision making process consists of the attribution of set of decisions to set of vectors, decisions about when to plant the lentils, distance between the seeds, how deep the lentils must be planted on the ground, how often the lentils must be watered, what pesticides are needed, when to harvest the lentils and how to do the harvesting, and in the example of the package, decisions about what packaging is the best option, what means of transport are necessary, what security and surveillance system is the best option according to the content and the destination, etc.

In the first option, the categorical single model and the categorical comprehensive model are static models, and the only role that the category attributed is going to play on the model is a role as a label indicating over the model the label of what category has been attributed. Later, the single model is included in the comprehensive model, which is not another thing but a more comprehensive model in scale where every single object modelled is labelled.

In fact, the first proposal made for the development of categorical models in the second stage of the specific categorical Modelling System is no other thing but the representation in scale of every single object to be included in a more comprehensive model, where every single model in scale is labelled with the category attributed, being only a static model.

In this static model the role played by the category attributed is only as a label, and the logical analysis of categorical sets made previously in the first stage of the specific categorical Modelling System when is going to play a key role is in the third stage of the specific categorical Modelling System to distribute sets of decisions to sets of vectors,

according to external and internal sets/vectors and according to the position of the single model labelled in the comprehensive model now inserted on the map, so having in mind not only categories related to the category of that object, but having in mind the geographical position and categories and object around the single model of that object as object of decisions now.

My first proposal for the construction of the categorical Modelling System the role played by the categories and the models is very static, I started changing some elements of this first and earlies proposal in the series of posts dedicated to the collaboration between by Application and by Deduction between the deductive and the categorical Modelling System, when I started thinking about the possibility of evolutionary and predictive models.

And as long I have been going on working in the categorical Modelling System, by the time I have started this series of posts dedicated to the unified categorical Modelling System, and having as a break the last half term, now what I am developing as a new proposal for the development of the categorical models to make categorical decisions, in the unified categorical Modelling System, is a more complex proposal where the categorical models are not static any longer, the categorical models are definitely dynamic, and the way to make decisions will change radically, having the categories a more important role than simply a label in the categorical model, as it was originally in my first proposal.

The most important characteristics of the second proposal are:

- The categorical single and comprehensive models are not static any longer, encompassing the categorical single evolutionary model, as a dynamic model of the object according to the internal/external set/vectors attached after the logical analysis of categorical sets, for instance, a evolutionary model of a land seeded with lentils, including all kind of details such as how thee seeds should be planted, watered, fertilized, and use of pesticides, according to the predictive probabilities associated with every single reaction within the solution with the highest predictive probability, according to climatic and geological conditions and chemicals, the chemicals on the ground, the climate, the lentils, and the expected behaviour of the lentils under such chemical, geological, climatic conditions, to have a categorical single evolutionary model of how the lentils should be treated (water, use of fertilizer, pesticides, etc...) and a prediction about how is going to be the harvest and percentage of productivity. Once the evolutionary and prediction single categorical models are ready, they are integrated

evolutionary and prediction comprehensive categorical model, and later on, the evolutionary and prediction comprehensive map.

- In this proposal, the role of the categories on the dynamic models is not only working as labels, but working as a key elements to make prediction single models, to predict which is going to be the behaviour of a real object under different scenarios, choosing as most probable that one with the highest probability. If a farmland is going to seed lentils, in a place like Chile, the most probable scenario is that sooner or later, there is going to be an earthquake. If the lentils are seeded under tropical weather, the most likely scenario is that sooner or later are going to suffer a hurricane. Both geological and climatic phenomena can be predicted when the specific application for the farm is co-working with other specific applications for climatic or tectonic conditions within the Unified Application. If an automatic delivery system needs to send a package to China, and as specific application within the Unified Application is working with other specific application, such as specific applications for the National Health System, if the automatic delivery system has to send a package from a place with an outbreak of high risk of some diseases, automatically any decision made by the specific application of the National Health System can be shared with the specific application for the delivery system, including for those areas with high risk some new categories related to health and safety in the packaging of any delivery. In the second proposal, the evolutionary models are going to be made based on the logical analysis of categorical sets, analysing predictive probabilities, and making evolutionary and prediction models of the real objects based on predictive probabilities.

- The predictive probabilities can be calculated having as a source of information, to calculate the probabilities, the categorical comprehensive evolutionary and prediction model, according to the expected evolution and prediction for the categorical comprehensive model, could be possible it could foresee what probabilities are associated to different phenomena, affecting every single variable/category/set/vector of any single model, as to make the more realistic model based on these predictive probabilities.

- The final aim of making dynamic categorical models based on prediction probabilities, based on the categorical comprehensive evolutionary and prediction model, is the possibility that in the future, not very far, the categorical comprehensive evolutionary model and the prediction model, could be synthesised with the deductive models of the deductive standardized Modelling System, as to create one Modelling System, product of the synthesis of the categorical and deductive single and comprehensive models.

In essence, the reasons for this development from the first proposal for the categorical Modelling System, as to create only static single and comprehensive models, to this second proposal for the categorical Modelling System more focused on dynamic categorical single and comprehensive models, are:

- As soon the first phase for the construction of Specific Artificial Intelligences for Productive and Mixed Artificial Research by Application is able to evolve to the second phase, the collaboration between Productive and Mixed Artificial Research by Application collaborating between them and with Specific Artificial Intelligences for Artificial Research by Deduction, the higher the collaboration is between intelligences, sharing more and more information and categories, the more isomorphic the models can be having access to more information about different phenomena in different intelligences able to affect their own models. As long the intelligences can collaborate between them borrowing information each other, the models that the intelligences could be able to make are more and more realistic, so that the intelligences could make more dynamic models involving future events, such as an earthquake or a hurricane, as to make more realistic predictions about the future to be included in the single and comprehensive models to locate on the map.

- Once the second phase gets ready the collaboration between intelligences by Application as to upgrade to the next phase, in this case the fourth phase, the unification process, by the time that former specific intelligences by Application are transformed into specific application within the unified application having as a sources the unified database of categories to make categorical attributions, and in the Modelling System the unified conceptual scheme and the unified categorical comprehensive evolutionary and prediction model, the models able to make having these sources of information are more and more realistic, and the reality is that the reality is dynamic changing at any time. If in the future the idea is to synthesise the categorical comprehensive models and the deductive comprehensive models, both must be dynamic, differentiating evolutionary and prediction stadiums in their respective representations of the objects of the real world.

At some point the evolution from the first proposal for the second and third stages in the specific categorical Modelling System, models are static and categories are labels in the model, to the second proposal for the second and third stages in the unified categorical Modelling System, models are dynamic and according to the logical analysis of

categorical sets in the first stage is chosen in the second stage the solution as combination of categories with the highest predictive probability, this evolution is understandable as part of the logical evolution that should take place from the first experiments in the first phase, as first period of experimentation in the first phase, to the more complex experiments, in the first period of experimentation in the fourth phase.

What it is foreseeable is that the first experiments in the first phase, in order to get first prototypes of Specific Artificial Intelligences for Productive or Mixed Artificial Research by Application, these experiments are going to try to get ready the first prototypes, simplifying as much as possible the modelling process.

Later on as long the first experiments on the first prototypes of intelligences by Application are ready to become specific applications within the Unified Application, along the collaboration process, during this long journey towards the unification process, as long as the prototypes get more complexity, access to more sources of information, and the consolidation process is progressing towards the final model of Global Artificial Intelligence, the first proposal for the specific categorical Modelling System will let make more complex models having the second proposal as main method for the creation of categorical models.

The evolution that I have shown in my proposal for the organization of the categorical models from the first phase to the fourth phase, is quite possible that is the evolution that many categorical models are going to show as long the categorical models evolve from the specific single and comprehensive categorical models to the unified single and comprehensive evolutionary and predictive categorical models.

In this evolution, the way to make decisions will be an important change from the first to the fourth phase.

In the first phase, the third stage of the specific categorical Modelling System made decisions matching set of decisions to set of vectors, for instance according to the vector linking the package with the corresponding category of size, or the corresponding category of destiny to choose the right means of transport or to set up the risk level or the surveillance, according to these vectors linking the category of the package with different categories, the distribution of set of decisions to these set of vectors deciding type of packaging necessary, means of transport, level of security, surveillance, etc. In essence

my first proposal for the third stage of the specific categorical Modelling System is synthesisable in the idea that the decision making process is a process of matching set of decisions to set of vectors, and for that reason previously it is necessary to set up what sets of decisions are going to be related to what sets of vectors, so that at any time that a set of vectors is attached to a real object, the third stage automatically can attribute what set of decisions must be attributed to that set of vectors, what means that it is necessary to program for ever set of vectors what set of decisions are related, so that the decision making process could be defined as an analysis using Venn diagram analysing what set of decisions converge in every single object analysing what set of vectors converge in the same real object. The decision-making process is done using a Venn diagram.

In my first proposal for the third stage of the specific categorical Modelling System in the first phase, the specific decision-making process will only require an analysis by a Venn diagram.

In this first proposal the process could be a little more complex, if in addition to the analysis using Venn diagram, other variables are introduced such as: the chronology and temporalization of every decision, for instance, when to plant, when to water, how often, when to fertilize, how often, when to use pesticides, how often, and when to harvest. After the application of the Venn diagram, the temporalization and frequency of every decision could be programmable, having as a base for these decisions the result using the Venn diagram.

But in the second proposal, the third stage is not so easy; it is a bit more complex. In the second proposal, as a base to start the decision-making process, there is a dynamic model consisting of the evolutionary and prediction categorical models already located on the map, and this dynamic model, located on the map, is the model of the solution with the highest predictive probability.

The solution itself is a combination of variables relevant for the model, related to a possible set of decisions. In this modelling process before hand is necessary to program very carefully what conceptual/logical sets/vectors and what quality set/vectors, as intrinsic variables, of the object itself, are chosen to be combined with extrinsic variables from the environment, as well as to program sets of decisions related to every possible combination.

The categorical model is the model of every single reaction, with very high predictive probability, due to the solution chosen, solution with the highest predictive probability, as a product of the combination of intrinsic variables, from the object itself (conceptual/logical and quality set/vectors) and extrinsic variables, from the environment, and possible set of decisions for every combination.

In the modelling process the way to make combinations between intrinsic variables (from the object itself) and extrinsic variables (from the environment), is to mingle all possible discrete categories related to any conceptual/logical or quality set/vector from the object with all possible discrete category from the environment, analysing every single combination as a possible combination related to a possible solution as a set of decisions, matching possible sets of decisions for every solution, and calculating the predictive probability of every solution and decision, and for every solution and decision analysing every possible reaction, calculating the probability of every possible reaction.

In the end, the model is the model of the solution/decision with the highest predictive combination and possible reactions with the highest predictive probability, of that combination of intrinsic and extrinsic variables, intrinsic from the object and extrinsic from the environment, more likely to happen, attached to the corresponding set of decisions. Placing the model of the solution/decision is more likely to happen as a dynamic model, including foreseeable evolution and foreseeable prediction within the categorical evolutionary and prediction model, to be placed finally on a categorical dynamic map.

In brief, the methodology of the second proposal for dynamic categorical models is:

- Identification of relevant conceptual/logical and quality set/vectors of the object as intrinsic variables of the object, according to the categorical attribution in the second stage by Application and how it was filed and analysed in the conceptual scheme as the first stage of the Modelling System.

- Identification of relevant variables from the environment, identifiable within the categorical comprehensive evolutionary model.

- Combination of all intrinsic and extrinsic variables between themselves.

- Calculation of predictive probabilities for every combination.

- Analysis of possible reactions to every combination.

- Calculation of predictive probabilities for every reaction.

- Attribution of a set of decisions to the most likely combination and reactions, as a result, this should be the most likely solution.

But this dynamic model is only a model, although dynamic. In this dynamic model is not represented only the farmland in scale, or the package in scale, but the model of everything, is the whole model of the solution, what means, the model of the chosen decision according to what set of decisions is related to the solution with the highest probability, modelling: from how to plant the seeds (distance between seeds, and depth), how to water and how often, how to fertilize and how often, when pesticides are necessary and how often, when and how to harvest, or what packaging is necessary, what means of transport are necessary, security level and surveillance systems, modelling the chronology of every single event during the plantation and the delivery of the product.

Saying that this model is only a dynamic model of the solution/decision what I say is that till now this is only a model, till now, no decision has been ordered to the Decision System, till now, the only thing that the specific application has done is only a simple drawing of a model of one solution attached to a set of decisions to put on a map, nothing else, till now, the only thing that the specific application has is only a very realistic and detailed representation of something real in scale, but till now there has not been ordered any decision to the Decision System, it is only a drawing.

Till now what the second stage of the unified categorical Modelling System has done, is using Venn diagram the specific application has identified intrinsic variables (sets/vectors analysed on the conceptual scheme, sets/vectors related to lentils or the package) in the object itself, and from the categorical comprehensive model what extrinsic variables from the environment can interact in the process, and using combinatory, to make as many combinations as possible between intrinsic and extrinsic discrete categories associated with intrinsic and extrinsic variables, calculating

predictive probabilities for every combination/solution related to a set of decisions, having as a source for this calculation the comprehensive evolutionary and prediction model/map.

What the specific application for the farm or the automatic delivery system has within the Unified Application, once the second stage of the unified categorical Modelling System is completed, is a very realistic model of the most likely model on the map.

Once the more probable model on the map passes to the third stage, is when it is time for the decision-making process, analysing the model on the map.

The model on the map is no other thing but a very realistic drawing of a possible solution as a set of possible decisions related to some combination of intrinsic and extrinsic categories.

Every time we look up on google maps, what we are obtaining is a list of possible solutions to our future journey, from one point to another, where every possible combination of categories, car, uber, taxi, walking or public transport, and within public transport the bus, the train, the tube, the over-ground, is a possible solution attached to the expected time of travelling, what it is going to be the most important criterion in our election of what combinatory is more suitable for our journey.

What we got on Google Maps is only a drawing; no decision has been made. Once we check the possible solutions according to the different combinations, and attach to every combination how long it would take the journey, we make a decision.

In this case, the decision is more likely dependant on how long does it take, but there are other criteria, such as, criteria related to our personality, like what we prefer, over ground to have a view of the city of London or tube to go faster, or bus because is cheaper.

In the same way that we make the decision on google maps depending on our personality or criteria like time, or speed, the categorical comprehensive evolutionary map will offer the most likely solution, and once the more likely solution is determined, according to the solution, the third stage of the unified categorical Modelling System is going to

transform the set of decisions attributed to the most likely combination in the solution, as a set of decisions to be ordered to the Decisional System.

At the end, in the second proposal, the solution is the decision, but the decision is not a real decision until it has been included in the categorical comprehensive evolutionary and prediction model, because, if the solution has any contradiction with any other single model in the comprehensive model, is the fourth categorical check in the comprehensive evolutionary and prediction map where this contradiction should be solved, so that the set of decisions involved in the solution can be transformed by the third stage of the categorical Modelling System into a set of decisions to be filed in the database of decisions as first stage of the categorical Decisional System ensuring that at least on the dynamic categorical map it had not any further contradiction, and analysing in the fifth categorical check in the third stage of the unified categorical Modelling System the absence of contradictions between the decisions involved in the set of decisions attached to the solution of the more likely combination of intrinsic and extrinsic variables.

In the end the mathematics behind the second proposal for the decision making process in the unified categorical Modelling System is not so different to other proposals made along this blog, being a result of: combinatory (of variables), probability (what combination is more likely), Venn diagram (matching set of decisions to the most likely combination of variables).

The mathematic behind the decision making process is not so different to artificial learning by probability, with the difference that instead of empirical probability, the categorical decisions are based on predictive probability, but this is only my proposal, in the proposal that other intelligence agencies are going to carry out are going to combine empirical probability and prediction probability, for instance, once it has been calculated the predictive probability of every solution, according to the records, which is the empirical probability of every possible reaction.

The decision-making process could be synthesised as a process where using empirical or predictive probabilities according to the combinatory of variables is possible by Venn diagram to match decisions.

What is very important in the second proposal for the unified categorical Modelling System is to keep a permanent surveillance along all the processes, due to the dynamicity of the system. Because the system is going to be based on dynamic models and dynamic maps, this means that at any time that there is a change in the dynamic models and map, there should be changes in all the single models included in the dynamic model and map susceptible to suffer variations due to variations of other single models.

If a single model of how to send a package from Los Angeles to London suddenly has to face a hurricane coming from Cuba, to the north Atlantic, the categorical model and map should make changes in order to face changes in the delivery of the package. At any time that the categorical comprehensive evolutionary or prediction model has a change, for any reason, the third categorical check should be able to identify any possible contradiction to make changes in the structure of the current single models on the comprehensive model, changes that should be communicated to the comprehensive map, rearranging the current decisions on the third stage making as many changes as necessary as update of the decisions in the third stage, update to be assessed by the fifth categorical check in the third stage of the Modelling System, to be communicated to the database of decision in the categorical Decisional System.

The way in which the solution with the highest predictive probability once it has been placed on the map not having contradictions at all, will be transformed into a range of decisions, is transforming every single decision of the set of decisions attached to the combination of variables as a decision to be labelled with sub-factor (position), sub-section (subject), priority, and time.

The priority of every decision in the third stage should be calculated using, for instance, Impact of the Defect in case that it is not applied and/or Effective Distribution, the importance of that decision in the chain of decisions to achieve high effectiveness.

The time of every decisions should be calculated using estimations of time, when a decision is expected, and making as many arrangements depending on the matter according to the intrinsic and extrinsic variables, for instance, when to plant, when to water and how often, when to fertilize and how often, when to use pesticides and how often, and when to harvest.

Here the Impact of the Defect or the Effective Distribution will play an important role, because maybe if the plantation is not watered one time, is not going to have a great impact, if it is not watered two times, could have some impact, but not important, but if it is not watered three or more times the impact of the product could be very important. Time and priority are quite possibly going to be very related.

The tasks to perform the third stage of the unified categorical Modelling System could be stated as follows:

- The third stage of the unified categorical Modelling System must transform the solution in a range of decisions to be ordered to the Decisional System.

- In order to get ready the range of decisions to be ordered to the Decisional System, the decisions must pass the fifth categorical check to ensure the absence of contradiction between decisions.

- Calculation of the priority level of every decision, using for that purpose techniques such as the Impact of the Defect and/or the Effective Distribution.

- Calculation of when every decision should be applied, time

- Analysis of what sub-factor (position) corresponds to every decision.

- What is the sub-section (subject) of every decision.

- The third stage of the unified categorical Modelling System files every decision in the corresponding place in the database of decisions, as a Russian Dolls system of categorical decisions, as first stage of the categorical Decisional System, where the first stage of the categorical Decisional System will make a quick check or the first categorical adjustment, depending on the priority level of every decision, to ensure the absence of contradiction between every new decision and the decisions already on the project, and in case of contradictions, any rearrangement of decisions will be made according to the adaptation rule, what means, the less priority decision must be adapted to the more

priority decisions, in case of partial contradictions, because in case of total contradictions, the less priority decision will be sent back the source, in this case the less priority decision will be sent back again to the categorical Modelling System to be rearranged again without contradiction.

In essence, the development for the third stage by application for productive or mixed intelligences is not different that that one working by Deduction, with the only difference that now the decisions are not based on rational decisions, equations, but on categorical attributions, so all the decisional process is categorical, matching sets of decisions to set of categories relate to the categorical attribution, and later on, the process is not so different, calculating priority levels, ordering according to position and subject, sub-factor and sub-section, and priority levels, and when the decision should be applied

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